METRICATION
GENERAL SECTION 15

15.1 SCOPE. To establish standard procedures for conversion to the metric system in the inspection and reporting of materials.

15.1.1 NOTE: The values stated in this manual in either inch-pound units or SI units are to be regarded separately as the standard. Within the text, the SI units are shown in brackets. The values stated in each system are not exact equivalents; therefore, each system must be used independently of the other.

15.2 PROCEDURE. It is the intent of the department that all MoDOT work be ultimately done in the metric system by year 2000. In the meanwhile, there will be a number of judgments and decisions that will have to be made. For contract work that refers to the Standard Specifications, Sec 106.10 will handle most authority needed for enforcement.

15.2.1 When a project is designed and specified in metric units, all reports to that project are to be in metric quantity units. If the report is to an English job, it may be in metric quantities provided the district is consistent about reporting the material that way. Dual units are acceptable, provided the units are clearly set apart and identified.

15.2.2 Reports to Maintenance, General Services, and other MoDOT divisions for other than construction work should be in the units as bid, normally English. It is anticipated that as the construction side becomes fully metric, the rest of the department will also.

15.2.3 Inspection of materials is to be "as presented", preferably in the contract units. However, it is imperative that "as constructed" units prevail, as that is normally the specification authority. When reports of materials are not identical to the specified contract materials, project personnel (in conjunction with materials personnel) will have to determine compliance. In most instances, there is little difference. In other instances, the contract will specify allowable substitutions. In some cases, metric is likely to be smaller than English and one may not work for the other. In all cases, there should be justification and documentation as to why a material other than that specified was accepted on the project. Above all, it is important that the report correctly identify the material and its manufactured units. If, e.g. the size of the material cannot be shown as metric, in all cases, the quantity units can be by conversion, using the appropriate decimal places.

15.2.4 Normally, when converting from English to metric, if one maintains the same number of significant digits, the same accuracy will be maintained, e.g. 125 feet (3 digits) converts to 38.1 m (3 digits).

15.2.5 In a "soft" conversion, an inch-pound measurement is mathematically converted to its exact (or nearly exact) metric equivalent. With "hard" conversion, a new rounded, rationalized metric number is created that is convenient to work with and remember.

15.2.6 IEEE/ASTM SI 10-1997, which is basically the same as ASTM E 380, is considered the final metric authority. See Table 1 for some common conversations. This may be critical in some instances, as it is not uncommon for calculators to be off from the official multiplier. In all cases, where some form of equipment does the conversion, the multiplier used should be checked. For the transportation industry, the following are considered as standards. Do not use multiples of 10 such as centi, deci, etc. except in rare instances where it eliminates a lot of decimal places. Example: In a range between cubic millimeters and cubic meters there is a lot of space and cubic centimeters may be appropriate, but should normally be avoided. Common units are gram and meters with prefixes of milli (10^{-3}), kilo (10^{3}) and mega (10^{6}). Megagram is the metric version of a ton, not "tonne" or long ton.